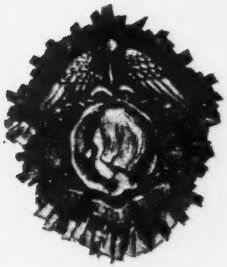
Journal of Dentistry for Children



THIRD QUARTER 1947

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Kenneth Easlick presenting certificate for honorary membership to the New Jersey Society of Dentistry for Children to Jack Wisan. Doctor John Campi, President of the State Unit, seems to be happy about it all.

The overwhelming success of the annual Luncheon Meeting of the New Jersey Society of Dentistry for children, held in conjunction with the Seventy-Seventh Annual Convention of the New Jersey Dental Society, made it one of the outstanding events of the Convention.

Over one hundred and fifty members and guests of the New Jersey Society of Dentistry for Children were present to honor Dr. Jack Wisan, who received the Certificate of Merit awarded annually by the Society of a member of the profession for salient services in the promotion of more and better dentistry for children. The award was made by Dr. Kenneth Easlick, Professor of Dentistry, University of Michigan.

Dr. Edward White, President of the New Jersey State Dental Society, presented a Certificate of Merit to Monsignor Peter O'Connor, North Arlington, New Jersey, chosen as the layman who had contributed most in the field of promotion of children's dentistry.

Immediately following the luncheon, an excellent presentation on "Adequate Restorations for Deciduous Teeth," was made by Dr. Easlick, His talk and many interesting and constructive ideas were supplemented by lantern slides.

Officers were elected as follows: President, Dr. John Campi, Asbury Park; Vice-President, Dr. Armand Rose, Montclair; Secretary, Dr. J. M. Wisan, Trenton; Treasurer, Dr. E. deMonseigle, Asbury Park.

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Statistical Aspects of Dental Diagnosis*

JAMES M. DUNNING, D.D.S., M.P.H.

Dr. James Morse Dunning's family background is rich in dental achievement. His father is Professor of Clinical Dentistry Emeritus at Columbia University, and his uncle, Henry, is the well known New York oral surgeon.

After his secondary school education at Allen-Stevenson School in New York, Dr. Dunning attended Harvard College receiving his A.B. in 1926. He received his professional training at Columbia gaining the degree D.D.S. in 1930. The Harvard School of Public Health has recently granted him the degree M.P.H.

Since graduation from Columbia, he has held various positions, frequently concurrently. Besides being engaged in private practice, he served two summers as dentist for the Grenfell Labrador Mission, has been attending dentist to the Heckscher Foundation for Children in New York, was for ten years Dental Director at the Metropolitan Life Insurance Co., New York, and has served as a part-time Instructor in Operative Dentistry at Columbia.

He entered the United States Naval Dental Corps in 1942 as a Lieutenant and was released with the rank of Lieutenant-Commander in 1945.

Dr. Dunning is the new Dean of the Harvard School of Dental Medicine.

M.M.C.

Claude Bernard, the great French physiologist who lived in the latter part of the last century, wrote a very interesting book, "EXPERIMENTAL MEDICINE," which anyone interested in dental research could read with interest. In this book, he said that determinism was possible in the field of medicine. He said that natural laws could apply to animals and men; he said that exceptions were unscientific. The type of research in which he was most interested was of the experimental type involving intense study of small groups of cases. He would much rather know a great deal about a very few cases than a little bit about a great many.

Unfortunately, much knowledge would be lost to us if we did not study large groups of cases. In doing so, we are forced to use the statistical method. Here Claude Bernard gives us a very good warning. He says, "We compile statistics only when we cannot possibly help it. Statistics yield PROBABILITY, NEVER CERTAINTY. Statistics can bring to birth only conjectural sciences." In all of this Bernard is right, but he neglects the constructive side of the picture. Anyone who has worked with large masses of data such as insurance companies compile, knows that valuable facts can be extracted from this material and that the regularity with which certain phenomena appear in even a very diverse population can be accurate to an uncanny extent. Statistical procedures allow us to strip the errors from a mass of figures involving a diverse population, and draw a simple conclusion from whatever may be left. It is not the purpose of the statistical method to strip the errors from a mass of figures foundation. It is the misuse of the statistical method in such a way which brands statisticians as a very special variety of liar!

The field of dentistry is one very well adapted to the use of the statistical method. The human teeth bear a permanent record of the activity of dental caries. Moreover, since the human mouth contains thirty-two teeth, the incidence of dental caries can be measured in terms of thirty-two or more degrees rather than by mere existence or non-existence of disease such as would be true of a disease like pneumonia. There are five major methods in which dental disease is recorded:

*Read before the American Society of Dentistry for Children, 6 November, 1946, at Forsyth Dental Infirmary for Children.

1. The percentage of a population with or without any evidence of caries. This method is best used where methods of diagnosis are very vague and particularly where skulls or historical records are being examined.

2. A count of decayed, missing and filled teeth, usually written DMF. This method has been brought into justified popularity by the U. S. Public Health Service. It can be applied to dental explorer examinations on a very wide scale, and has the advantage that results are so nearly standard that the work of different examiners trained to the same detailed method can often be compared. A sensible precaution in using the DMF method is to omit third molars unless x-ray evidence is present to tell us whether these teeth have failed to erupt or have been lost because of dental caries.

3. Decayed, missing and filled *surfaces* can be charted (DMF). This gives a more sensitive measure, but is open to larger errors since proximal caries is often not well charted and different operators may vary greatly as to their technics. It should be applied only where a small number of operators have been trained to use exactly the same method of examination. The Bodecker index, developed by Charles F. Bodecker of Columbia twenty years ago, was the precursor of this method.

4. A measurement can be made of lesions of caries. This method is of value chiefly where one examiner is doing the entire survey.

5. The final refinement involves a listing not only of number of lesions, but an estimate of the size of each. It is of value chiefly on experimental animals where a research worker can study teeth under a dissecting microscope, can section the teeth if he wishes, and can take x-rays.

As a warning against errors inherent in large numbers of dental examinations compiled by different observers, table I has been included. The first column of figures is taken from U. S. Public Health Service Bulletin No. 226 and was compiled by questionnaire. The second column of figures represents a personally conducted study by H. T. Dean and his co-workers covering exactly the same cities and boys in exactly the same age group. It was performed only six years later and the difference in caries activity can certainly not be explained on the basis of any over-all time trend. Note that the two columns of figures vary by as much as 276%.

TABLE I

Comparison of dental examination findings by two groups of observers in boys 12 to 14 years of age.

	DMF Teeth per 100 persons		
Locality	First observers (a)	Second observers (b)	Percent difference
Pueblo, Col.	223	412	85%
Colorado Springs, Col.	206	246	19%
Elkhart, Ind.	219	823	276%
Mich. City, Mich.	451	1037	130%
Lima, Ohio	253	652	158%

(a) Messner, C. T., et al., U. S. Public Health Service Bulletin 226. Questionnaires to private dentists and school dentists, 1936.

(b) Dean, H. T., et al., U. S. Public Health Reports 57:1155, 1942.

A statistical constant unfamiliar to most practicing dentists, but exceedingly important in the handling of large groups of dental examinations in the *standard deviation.* This figure measures the scatter of individual observations around the average just as the average measures tendency of the data to center at a center point. Table II is an illustration. The column on the left hand side has figures with an average of 7; so, also, has the column on the right hand side. The column on the left hand side, however, shows figures that scatter widely from the average of 7. The variations reach as much as four in either direction. Statisticians for reasons that need not be considered here, square these deviations from the average, add them together, divide them by the number of cases, and then "unsquare" them. The final figure of 2.8, in this instance, is a convenient measure of the scatter of the individual cases about the average of seven. The right hand column shows much smaller deviations. Two is the maximum. Following the same procedure, the standard deviation of 1.4 is reached. It is obvious that the figures 2.8 and 1.4 are as valuable in describing these sets of observations as the average of seven, common to both. If comparisons are to be made between two sets of figures with different averages, it must be known accurately how the observations in each set scatter about the average. Figures on DMF teeth per person frequently are subject to standard deviations of as much

as five teeth in either direction from the average.

TABLE II

Standard deviations of two sets of figures with an average of 7. (a)

x	(x—m)	$(x—m)^2$
3	—4	16
5	—2	4
7	0	0
9	2	4
11	4	16
5)35	0	5)40
m= 7		σ^{-2}= 8
		$\sigma^{-} = \sqrt{8}$
		σ^{-} = 2.8
x	(x—m)	$(x—m)^2$
5	—2	4
6	—2	1
7	0	0
8	1	1
9	2	4
5)35	0	5)10
m= 7		σ^{-2}= 2
		$\sigma^{-} = \sqrt{2}$
		σ^{-} = 1.4

(a) "x" means the original score, "m", the average, "σ—", the standard deviation.

It is common knowledge that the larger a sample the more reliable is the average of the cases it represents. For this reason, the standard deviation of a group of figures can be divided by the square root of the number of cases involved, and a figure obtained which is called the standard deviation of the mean (or average). This latter constant is of value in making significance tests in order to tell whether two sets of observations really represent different conditions or might have arisen by chance from a single set of conditions. I shall not go into the mathematics necessary to complete such a test, but merely emphasize that every dental research worker should know that such a test does exist and should be applied where comparisons are made between groups of data. The answer to a significance test is in terms of probability not certainty. From it you will learn that the two sets of figures have a 5%, or a 1%, or a one millionth of 1% chance of having arisen from the same set of conditions. Such a test is far more informing than a comparison of percentages. As an illustration, suppose that a fluoride preparation has been used on a group of children over a period of one year. Dental examinations are made before and after treatment, and the observer may conclude that there has been a 5% increase in caries in the experimental children and a 10% increase in the control children at the end of the treatment period. A mere statement that dental caries has been controlled 50% would be utterly unwarranted, for the difference in caries rate might lie well within the realm of chance. It would be far better to express the increase in caries in terms of new lesions per person and then apply the significance test to the difference between lesions.

The study of medical statistics is an arduous one, though rewarding to any dentist who may care to make it a hobby.[2] Unless he can devote considerable attention to the subject, it would be wisest for him to express the results of any statistical study he may make in terms of a frequency distribution which will record all of the values he found in individual cases, grouping them for simplicity if necessary, (i.e. five-year age groups, where a large age span is covered). An alternate method is to submit one's material to an expert statistician, let him perform such tests as he wishes, and report the results of those tests in his own words.

SUMMARY

1. Select cases from as homogeneous a group as possible so that unnecessary variables may be eliminated.

2. Use a method of examination which can be applied accurately to the group you are studying and can be compared to other groups that may be available in the literature.

3. Use as small a group of examiners as possible and if more than one man must do the work, be sure that the various examiners have compared notes and arrived at a standardized technic.

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2. Hill, A. Bradford: Principles of Medical Statistics, Third Edition, The Lancet, Ltd., London, 1942. A good general reference.

Dental Caries Experience in Postwar Italy (1945)*

Among Hospitalized Children (Ages 6 to 14 Years) in Naples

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INTRODUCTION

The very low prevalence of dental caries in large groups of undernourished children and adults in postwar Italy has been reported recently by Schour and Massler (1947a) and Massler and Schour (1947). In view of the findings in these studies that the prevalence of dental caries is not necessarily increased by poor nutritional status, it was felt that it would be desirable to determine whether the health status of the child would influence the prevalence of dental decay. An opportunity presented itself to the Italian Medical Nutrition Mission to investigate this problem in a group of malnourished and chronically ailing children at the Pausilipon Hospital in Naples. The control group consisted of a much larger number (about 500) of unselected undernourished Italian children of similar ages living in Naples (Schour and Massler, 1947a; Massler and Schour, 1947). Because of the interest of pedodontists in this country, data on American children are included for purposes of comparison.

This study is based upon the clinical examination of 141 malnourished and chronically ailing children 6 to 14 years of age living at the Pausilipon Children's Hospital and the Preventorium Santo Buono in Naples (1945). The distribution between males and females was approximately equal.

Pausilipon Hospital is an institution for chronically ailing infants and children located in the city of Naples. It was selected by the Italian Medical Nutrition Mission for intensive study of malnutrition in the age group 6 to 14 years because of the controlled conditions which it offered. The Preventorium Santo Buono is affiliated with this hospital and is located in another part of the city. It presents almost identical conditions of housing, supervision, and dietary intake. The children are often transferred from one hospital to the other, depending on their state of health. Those acutely or chronically ill are kept at Pausilipon while those who are convalescent are transferred to the Preventorium. In both places the children often remain for years, being returned to their homes at infrequent intervals.

The hospitals resemble institutions for the care of chronically ailing children rather than hospitals in the American sense of the word. The children suffered from various chronic disorders; rickets, nutritional edema and tuberculosis being prevalent. Skin infections were common. Clinical signs of nutritional deficiencies were prominent. The majority showed clinical signs of protein deficiency, rickets, vitamin A deficiency, and vitamin B deficiency. Clinical signs of scurvy were not observed and blood ascorbic acid levels were within normal range.

The dietary at both hospitals was identical and was supplied before and during the war by local charities. UNRRA continued to supply essentially the same dietary from April

*This study was conducted under the auspices of the Italian Medical Nutrition Mission. Grateful acknowledgment is given to the Unitarian Service Committee, the Congregational-Christian Service Committee and the UNRRA who provided the necessary facilities for this investigation.

1945 and through the period of this study which was instituted in September 1945.

The dietary analysis was made by Miss Ruth Flumerfelt who kindly supplied the following information:

"The diet history of Pausilipon Hospital shows that skim milk powder, bread, pasta, (spaghetti) rice, oil, and fruit are used daily. Meat, dried peas, dried beans, vegetables, and marmalade are served to the children 3-4 times per week. This diet applies only to the older children. Food for the nursing infants is cooked and prepared separately. It consists of skim milk powder, bread, rice and pasta. Three to four times per week meat is offered to babies six months and older. Table 1 shows a dietary analysis of the two groups with the standard minimal requirements of the Food and Nutrition Board National Research Council (1945) for comparison.

"The outstanding dietary deficiencies are in fat, calcium, and Vitamin A. These figures represent the optimal daily intake since they were calculated without consideration of cooking losses of water-soluble and heat labile nutrients. The staple foods are usually boiled 2-3 hours in an open kettle on a charcoal stove. Exact calculation of such cooking losses is difficult, but the loss is probably considerable."

From the dietary analysis, it can be seen that the caloric and protein requirements were met. The intake of iron and vitamin B complex were apparently adequate. Clinically, however, the children were often undernourished and underweight while signs of hypochromic anemia and deficiencies in the B complex of vitamins were prominent. Although the intake of ascorbic acid was apparently low, the blood serum levels were not unusually low, nor were clinical signs of scurvy prominent. Rickets, on the other hand, was very much in evidence in spite of the sunny climate and frequent exposure to sunlight. This prevalence of rickets (in spite of adequate sunlight) was thought to result from the low intake of fats. Clinical signs of vitamin A deficiency were very prominent.

The examination of the oral cavity was made by a dental team consisting of one American dentist, two Italian dentists (Drs. A. Siciliano and V. Coiro) and a recorder. The method of examination and recording was the same as that used for a group of unselected teen-age children studied at the same time (Massler and Schour, 1947). Because of the lower ages in this group, caries of the primary teeth was included in the records. Missing teeth were recorded as follows:

Primary teeth — normally exuviated — crossed out in black pencil.

Teeth lost because of caries—crossed out in red.

Teeth lost because of periodontal disease—crossed out in blue.

The caries index for teeth and surfaces was computed as in the previous studies (Massler and Schour, 1947), but included primary as well as permanent teeth.

TABLE 1

Analysis of the Diet of the Children of Pausilipon and Comparison with the Recommended Dietary Allowances of the National Research Council, 1945

	Nursing Infants		Children up to 12 years of age	
	Pausilipon	Requirement	Pausilipon	Requirement
Calories	100/kilo	100/kilo	1928.00	1200-2500
Total Protein-gm	2.2/kilo	2.2/kilo	61.00	40-70
Fat-gm	10.50		25.80	
Carbohydrate-gm	240.00		363.00	
Calcium-gm	0.49	1.0	0.65	1.0-1.2
Iron-mg	6.70	6.0	13.80	7-12
Vitamin A-I.U.	30.00	1500	352.00	2000-4500
Thiamine-mg	0.52	0.4	1.13	0.6-1.2
Riboflavin-mg	0.93	0.6	1.82	0.9-1.8
Niacin-mg	6.34	4.0	10.33	6.12
Ascorbic Acid-mg	23.00	30.0	9.20	35.75

From Flumerfelt (unpublished).

FINDINGS

Caries. The caries index for this group of 141 chronically ailing children 6 to 14 years of age was 2.37 decayed primary and permanent teeth and 3.43 decayed tooth surfaces per child (Table 2). The number of decayed teeth per child was about 30% higher than that found in unselected Neapolitan children ages 6 to 15 years who showed 1.78 decayed primary and permanent teeth per child (Massler and Schour, 1947). However, the prevalence of caries at Pausilipon was still less than half the average of 5.2 decayed primary and permanent teeth per child and 10.36 decayed tooth surfaces per child for healthy Hagerstown, Maryland, children ages 6 to 14 years (Table 3).

Distribution of Pit and Fissure Decay and Proximal Decay. The carious lesions occurred primarily in pits and fissures (53.5%) and proximal surfaces (44.0%) of the posterior teeth (Table 2). This conforms, in general, with the findings of Klein and Palmer (1941) for the permanent teeth of children 6 to 15 years. They found that almost 50% of all carious lesions occur in occlusal pits and fissures.

Percent of Caries-free Children. Thirty-one per cent of the children were caries-free, that is, had no signs of decay in either the primary or permanent teeth. This is less than that found in unselected Neapolitan children ages 6 to 15 years (42% caries-free). However, the number of caries-free dentitions in this group was higher than in healthy children in the United States where freedom from caries in the *permanent teeth alone* (omitting the primary teeth) occurs in only 32.2% of the children ages 6 to 14 years. (Averaged from data presented by Klein and Palmer 1941). Data for the mixed dentition was not available and was therefore interpolated in Table 3.

Degree of Caries. Caries progress was relatively slow considering the fact that decay in primary teeth was included. Forty-three per cent of the children had slow, localized carious lesions while almost 23% had more rapid and extensive lesions. Only 2.5% of the children showed rampant caries and one or more teeth indicated for extraction.

In every respect, the carious lesions were more severe in the Pausilipon Group than in the Preventorium Group.

TABLE 2

Analysis of Dental Caries in 141 Malnourished and Ailing Children Ages 6 to 14 Years in Pausilipon and Preventorium

	Pausilipon	Naples	Hagerstown
Total Number of Children	141		
No. in Age Group 6-9 years	95		
No. in Age Group 10-12 years	32		
No in Age Group 13-14 years	14		
*No. Carious Primary and Permanent Teeth per Child	2.37	1.78	5.2
*No. Carious Primary and Permanent Tooth Surfaces per Child	3.43		10.36
Ratio of Carious Surfaces to Carious Teeth	1.44		
Caries Topography			
Total No. Surfaces Affected	484		
Pit and Fissure Decay	53.5%		
Proximal Decay	44.0%		
Cervical Decay	1.5%		
Rampant Decay	0.7%		
Degree of Caries			
% Children Caries-free	31.2%		
% Children with Mild Caries	43.3%		
% Children with Moderate Caries	22.7%		
% Children with Severe Caries	2.8%		

*Carious teeth or surfaces indicate teeth or surfaces attacked by caries, i.e., actively decayed, filled or missing because of caries.

TABLE 3
Prevalence of Caries in Deciduous and Permanent Teeth in Children Ages 6 to 14 Years of Hagerstown, Md.

Age Last Birthday	DF Primary Teeth per Child *	DMF Perm. Teeth per Child **	Total Decayed Primary & Perm. Teeth per Child	DF Primary Tooth Surfaces per Child *	DMF Perm. Tooth Surfaces per Child **	Total Decayed Primary & Perm. Tooth Surfaces per Child
6 Years	5.2	0.3	5.5	10.05	0.4	10.45
7 Years	5.1	0.7	5.8	10.60	1.0	11.60
8 Years	5.1	1.2	6.3	11.05	1.7	12.75
9 Years	3.3	2.0	5.3	7.85	3.8	11.65
10 Years	2.6	2.5	5.1	5.25	4.9	10.15
11 Years	1.2	2.8	4.0	2.40	5.2	7.60
12 Years	0.5	3.7	4.2	1.10	7.1	8.20
13 Years	0.2	4.5	4.7	0.40	9.3	9.70
14 Years	0.7	5.6	6.3***	0.20	11.0	11.20
Average for 6 to 14 Years	2.65	2.59	5.24	5.43	4.93	10.36

*Knutson, Klein and Palmer, J.A.D.A. 1940. From combined data for boys and girls. Missing primary teeth omitted from count. Designated as *d* (decayed) and *f* (filled) deciduous teeth, i.e., teeth attacked by caries.
**Klein and Palmer, 1941. Both sexes combined.
1. The individual figures in this table differ only slightly from those presented by Sandler, 1940, who analyzed the data presented by Klein, Palmer and Knutson in P.H.R. 53, May, 1938. The average figure is the same.
2. It should be pointed out that the Hagerstown group represents a relatively low caries prevalence group in the United States. Similar studies in New Jersey and other states indicated a much higher prevalence of caries in their children (4.5 D.M.F.) permanent teeth per child for ages 6 to 14 years).

TABLE 4
Prevalence of Caries in First Permanent Molars in 6 to 14-Year-Old Children of Hagerstown, Md.

	MORALITY		MORBIDITY	
Age Last Birthday	No. DMF First Perm. Molars per 100 Children *	% of Total No. 1st Perm. Molars That Are Carious ***	No. 1st Perm. Molars Missing Because of Caries per 100 Children **	% of Total No. 1st Perm. Molars Missing Because of Caries ***
6 Years	27.84	7.0%	0.0	0.0%
7 Years	71.98	18.0	2.7	0.67
8 Years	115.84	29.0	4.9	1.2
9 Years	174.26	43.5	17.8	4.4
10 Years	210.78	52.2	28.9	7.2
11 Years	214.32	53.5	29.7	7.4
12 Years	239.96	60.0	42.8	10.7
13 Years	270.98	67.7	64.8	16.2
14 Years	291.82	73.0	76.3	19.1
Average for 6 to 14 Years	179.75	45.0%	29.76	7.4%

*From data presented by Klein and Palmer, J.D.R., 1941.
**From data presented by Knutson and Klein, P.H.R., 1938.
***Calculated on the basis of 400 first permanent molars per 100 children.
****Averages of data for 6 to 14-year-old children presented by Cohen, J.A.D.A., 1936, gives the following:
Percentage of First Permanent Molars that are Carious—74.4%
Percentage of First Permanent Molars Extracted—8.3%
*****Average of data for 6 to 14-year-old children presented by Cheyne and Drain, J.D.R., 1940, gives 15.74 1st permanent molars extracted per 100 children (4% of total number of first permanent molars).

First Permanent Molars. The prevalence of caries in the first permanent molars is a valuable indicator of caries experience in this age group since the first permanent molars appear in the oral cavity at about 6 years of age and remain thereafter as a part of the mixed and permanent dentitions without being shed. These teeth thus cover a continuous and longer period of exposure to attack by caries than any other class of tooth. In addition, because of its anatomical configuration it is the most susceptible to decay. Since caries prevalence is cumulative, the first permanent molar in the same child expresses

TABLE 5
Comparison of Caries Experience in 74 Pausilipon Children with Caries Experience in Hagerstown Children (Ages 6 to 14 Years)

	Pausilipon, Naples	Hagerstown, Md.*
No. of Decayed Primary and Permanent Teeth per Child	2.37	5.24
No. of Decayed Primary and Permanent Tooth Surfaces per Child	3.43	10.36
Ratio of Carious Surfaces to Carious Teeth	1.44	1.97
No. of DMF 1st Perm. Molars per 100 Children	37.83	179.75
No. of Missing 1st Perm. Molars per 100 Children	4.0	29.76
% of Total No. 1st Perm. Molars—Caries Free	90.5%	55.0%
% of Total No. 1st Perm. Molars—with Caries	9.5%	45.0%
% of Total No. 1st Perm. Molars—Extracted	1.0%	7.4%

*From Tables 3 and 4

more correctly the influence of age in caries experience than do the permanent teeth which erupt later (Salzman, 1937; Knutson, 1942).

Unfortunately the number of children in the Pausilipon Group alone is too small to be useful for statistical purposes and no conclusions should be drawn from the figures presented in Table 5. The data are included only for the sake of completeness since they do not contradict the general findings but only reiterate them, i.e., that caries was much less prevalent in the Pausilipon children than in the Hagerstown children.

Comparison of findings in first permanent molars of the 74 children at Pausilipon and children in Hagerstown are presented in Table 5. The data on Hagerstown children used in Table 5 was obtained by re-evaluating the published figures of Knutson and Klein (1938) and Klein and Palmer (1941). These data are also presented in Tables 3 and 4 for future reference and use by pedodontists making similar studies in this country.

DISCUSSION

The prevalence of caries in Pausilipon was higher than in unselected children living in Naples. This fact should be explained. Although the dietary in Pausilipon was far from adequate, the children did receive a more complete diet than those living in the city of Naples (Flumerfelt). They were, presumably, not as healthy since they had been selected for admission to the hospital on the basis of acute and chronic ailments. It is evident to those who have investigated hospitalized children in the United States that the incidence of decay tends to be higher in sick children than in healthy children, although no statistical survey is, to our knowledge, available. *It would appear from this small survey that illness has some influence in increasing the caries prevalence.*

In spite of severe malnutrition and chronic illness, the prevalence of dental decay was lower in these Italian children than in well-nourished, healthy children of similar ages living in the United States. As indicated in previous reports (Schour and Massler, 1947a; Massler and Schour, 1947), this difference in the prevalence of caries might be explained on the basis of (a) a much lower intake of refined sugars (the consumption of starches was very high); (b) a distinct deficiency in niacin and other members of the B complex of vitamins which possibly prevent the complete metabolism of the carbohydrates by the oral bacteria; or (c) a combination of both.

The small number of children included in this study does not permit more definitive conclusions. The material is presented only for its special interest to the pedodontist and in order to indicate the methodology which might be found useful in future extended surveys of similar problems in the United States.

Summary and Conclusions

One hundred forty-one malnourished and chronically ailing children ages 6 to 14 years in the Pausilipon Hospital in Naples were studied for dental defects. The caries prevalence was found to be higher than in unselected undernourished but non-ailing Neapolitan children of the same age group. This might be associated with the illnesses

of the hospitalized children.

In spite of severe malnutrition and chronic illness, the prevalence of caries was much lower than in well-nourished, healthy children of similar ages living in the United States.

These findings do not support the view that good nutrition is essential to protection against dental caries. The very low intake of refined sugars could explain the low prevalences of dental caries. This was true in spite of a very high intake of carbohydrates in the form of starches and a dietary which was very deficient in proteins, fats, minerals and vitamins.

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SECRETARY'S MESSAGE

In anticipation that this issue of the Journal will reach the membership just preceding the 1947 full scale meeting of this Society no other items of interest would be of any significance. Inasmuch as this will be the first full scale meeting since October, 1941, in Houston, all the officers and those of the membership who are working on the details of the fine meeting being planned are particularly enthusiastic about the plans of the meeting and the details already accomplished, and anticipate a record attendance.

Hotel headquarters have been secured and luncheon arrangements concluded. All Executive Council and other business meetings, program presentations, and the Special Luncheon will be held in the Hotel Somerset, 400 Commonwealth Avenue, Boston 15. The dates of our meeting will be August 2, 3, and 4. All members attending the A.D.A. Meeting are urged to arrange their plans that they may attend and participate in this meeting, and become better and more closely acquainted with their fellow A.S.D.C.'ers.

At the present writing the THIRD AND FINAL NOTICES have been sent out for the dues of those who have as yet failed to remit them, and by the time this issue of the Journal will have been delivered it will have been necessary to have dropped from the mailing list the names of those who are so delinquent. Nevertheless reinstatement and re-listing on the mailing list may be so easily accomplished by sending in the $3.00 dues thus extending the membership and being assured of admittance to the meetings and a continued arrival of the Journal.

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IMPORTANT ANNOUNCEMENT

The 1947 Annual Combined Meeting of The American Society of Dentistry for Children and The American Association of Public Health Dentists will be held at the Somerset Hotel, Boston Massachusetts, August 2, 3, and 4.

PROGRAM

Saturday, August 2

10:30 A.M.-3:30 P.M.—Business meetings and election of officers.

4:00 P. M.—Dr. Paul Losch will conduct a tour of inspection of Forsyth Dental Infirmary, Children's Hospital, Tufts and Harvard Dental Colleges, Harvard School of Public Health, and White Units.

Sunday, August 3

12:00 A.M.—Panel Discussion, "Progress in Caries Control,"
Dr. Joseph Volker, Dean of Tufts Dental College, leader.

12:30 P. M.—Luncheon, sponsored by A.A.P.H.D.
Toastmaster, Dr. Taylor, President, A.A.P.H.D.

1:30-5:00 P. M.—Panel Discussion, "The Fluorides in Dentistry."
Participants: Dr. Shirley Dwyer, Dr. F. A. Bull, and others.

Monday, August 4

12:30 P. M.—Twentieth Anniversary Luncheon of The American Society of Dentistry for Children.
Toastmaster, President Jack M. Wisan.
Speaker, Dr. Paul Losch, "Twenty Years of Progress in Dentistry for Children."

Dental Hygienists and Assistants are invited to attend the panel discussions and luncheons.

Make your A.S.D.C. luncheon reservation now—by sending in the coupon below with your check for $3.00.

Dr. A. L. Corbman,
8 Beacon Street, Room 67
Boston 8, Mass.

Please send_____tickets for the Twentieth Anniversary Luncheon of the A. S. D. C., Monday, August 4, 1947, Somerset Hotel, Boston.

_____*Name*

_____*Address*

_____*City*

An Editorial—

Well—are you?

Perhaps, as a little child begins to walk and talk and later to understand the things his mother explains, we of the dental profession should see to it that he is taught not to expect and demand dental attention, even though he lives in what is considered to be the most enlightened and advanced country in the world!

A fundamental principle expressed by dental societies, both local and national, and in the classrooms and clinics of our schools of dentistry, is that well cared for teeth and oral cleanliness are essential to good health, and all health agencies insist that children especially should receive most of the preventive serums, toxin-antitoxins, toxoids, etc., which, to date have been discovered. Yet how few of the active, practicing members of our own profession, and of the medical profession, actually make any effort to provide or insist that proper dental care *be* provided, for these same children, when the cases are brought from the realm of abstraction to actuality in an office!

What a confusing situation a child may discover when he develops a toothache! At school his teachers, and at home his parents, may have told him how important it is that he brush his teeth well, not eat too much candy, not suck his thumb, to drink his milk and orange juice so that he can keep his teeth for many, many years, and then, when perchance he does have a toothache and is taken to the dentist (who always seems glad to have mama and papa come in to have *their* teeth repaired or replaced) that same dentist either doesn't act very interested and wants to send him on to some other dentist, or else wants to extract his tooth—"'cause it's only a baby tooth, and you'll have a new one there in three or four years!" How can a child understand this peculiar, disturbing, and contrary state of affairs? Up 'til the time the toothache appeared, his teeth were pretty important things for him to care for and keep, but as soon as one hurts him, "it's only going to last a little while anyway—you might just as well have it out now!"

Are you one of those dentists who declaim, "Nothing is too good for children—they're entitled to the best of everything within reason, especially good and thorough dental attention!", but who are oblivious to the patent fact that it is their own personal obligation to provide such dental care?

A.E.S.

PULPOTOMY

A Conservative Treatment for Exposed Vital Young Permanent Teeth

A. L. CORBMAN, D.D.S., M.P.H.*

Editor's Note—

Larry Corbman, a graduate of Temple University Dental College, 1938, pursued his post graduate education at N.Y.U. Dental College and the University of Michigan School of Public Health, receiving his M.P.H. degree in 1945 from the Ann Arbor school. He enjoyed private practice in Merion, Pennsylvania from 1938-41, and the Indian Service of the U.S. Dept. of Interior and the Puerto Rico Insular Service prior to his return to studies. Since 1945 he has been Acting Director, Division of Dental Health, Mass. Dept. of Public Health. He is Chairman of the Committee on Arrangements for our Twentieth Anniversary Meeting in Boston and cyesis permitting, will be on deck to tell you more about himself!

A.E.S.

The prevention of the loss of exposed vital permanent teeth in children is of major concern to the dental profession. Extraction of these teeth would very likely result in disturbance of proper mastication, drifting of teeth with subsequent malocclusion, and in the case of anterior teeth, esthetic impairment. Dentists are faced with the problem of avoiding extraction of these teeth and of preserving them in the mouth free from infection and pain.

In an attempt to find a solution to this problem, the technic of pulpotomy or partial pulpectomy has been the subject of serious investigation during recent years.

According to Novikoff, pulpotomy implies the excision of the pulp contents from the pulp chamber, leaving the contents of the root canals undisturbed in contradistinction from pulpectomy, where all the pulp tissue from pulp chamber and root canals is removed. Pulpotomy differs from pulp capping in that in the latter, no pulp tissue is removed at all, but a minute accidental perforation of the dentin exposing the pulp is closed over or capped to protect the pulp from pressure and irritation from the subsequent filling.

McBride recommends pulpotomy in teeth having large exposures of instrumental origin, in teeth where removal of carious dentin would result in exposure, and in teeth where retention of infected dentin, though silver impregnated, would result in future self-devitalization. It is advocated particularly in teeth where root formation has not been completed. By the same token, pulpotomy has been suggested for traumatic fracture of crowns of anterior teeth in youth before complete calcification of the root has taken place.

There is general agreement among authors that pulpotomy is contraindicated where the tooth is sore to percussion or where there is a putrescent pulp. In cases of periapical involvement, extirpation of the total pulp and root canal therapy is sometimes indicated. Extraction is often necessary as a last resort.

Inasmuch as partial pulpectomy is a surgical procedure, success in treatment depends to a great extent upon asepsis, tissue resistance, immunity, and the general systemic health of the individual.

Review of the Literature

From a review of the literature it becomes apparent that there are two schools of thought concerning pulpotomy, one school employing the "devitalization" technic, the other the "vital" technic—which currently has become rather popular. In the former technic, the pulp is devitalized with arsenic or a similar substance, the coronal pulp amputated and the remaining pulp mummified with Gysi's

Trio paste, the active principle in which is paraformaldehyde. It is the aim of this treatment that the remaining pulp be eventually replaced by secondary cementum which serves as an excellent root canal filling.

In the "vital" technic, the coronal pulp is amputated under a local anesthetic, hemorrahage controlled, and the remaining pulp covered over with a bland paste. It is the aim of this treatment that dentin be formed over the surface of the wound and wall off the pulp canals from the cavity.

I. "Devitalization" Pulpotomy.

Hess used metallic arsenic to devitalize the pulp, amputated the major part of the pulp and mummified the remainder with Gysi's Trio paste. He observed a characteristic cycle: Resorption of the dentinal wall and enlargement of the canal by cells from an infolding of pericemental tissue, which cells later deposited osseous tissue (secondary cementum) until the canal was obliterated. Any pulp tissue, so walled off in the canal, constitutes a permanently sterile closely adherent root canal filling, the arsenic having served as a good sterilizing agent.

Using the devitalization technic, Muller reported that the fate of the remaining pulp is dissolution by granulating tissue, which in turn lays down a continual deposit of secondary cementum, an ideal root canal filling. Testing these teeth years later revealed negative bacterial cultures.

Using the devitalization technic, Bossard observed the formation of secondary cementum at the apices of the treated teeth.

Berman used metallic arsenic for devitalization and Gysi's Trio paste for mummification of the remaining pulp. He observed that a mummified tooth does not lose color, does not look so unnatural and is not quite as brittle as a tooth with an extirpated pulp.

Levine devitalized the pulp with Nervarsen, mummified the remaining pulp with Gysi's Trio paste, closed the cavity with a zinc oxide paste and placed a permanent filling immediately. He observed calcification of the remaining necrotic pulp by ingrowth of cementum from the peridontal membrane.

Ganzberg devitalized the pulp with arsenic, amputated the coronal pulp, placed over the remaining pulp an antiseptic paste containing thymol iodide, eugenol, glycerin and orthoform, and covered this with zinc oxyphosphate cement. He observed closure of the apical foramen with cement substance and dense scar tissue.

Orban, experimenting with paraformaldehyde on the surface of an exposed pulp, found necrosis of pulp tissue and periapical tissue inflammation. Also, placing paraformaldehyde mixed with zinc oxide and eugenol in a concentration up to 10 per cent in a cavity with no pulp exposure, he found the pulp tissue vital but with signs of degeneration and much secondary dentin formation.

II. "Vital" Pulpotomy.

In an extensive series of experiments, Davis amputated the coronal portion of the vital pulp under local anesthesia, and covered the remaining live pulp with a bland paste, which became incorporated into the blood of the wound. He concluded that in the absence of gross infection and destructive drugs, teeth with partial pulpectomy remain vital and heal with a calcified connective scar tissue. He added that a tissue metaplasia may occur, which sometimes continues to the complete obliteration of the pulp.

Aisenberg amputated the vital coronal pulp of a fractured tooth under local anesthesia, placed a zinc oxide-eugenol paste over the remaining pulp and sealed the cavity with cement. Fifteen months after this operation, he observed complete closure of the apex and secondary cementum lining the walls of the canal in which the pulp had changed to adult connective tissue.

Novikoff amputated the coronal portion of the vital pulp under local anesthesia with novocaine, controlled hemorrhage by sterile cotton pellets dipped in adrenalin chloride, and filled the cavity with a paste containing zinc oxyphosphate cement, aristol (Thymol iodide) and oil of cassia. Cement was flowed over this and an amalgam restoration placed immediately. He reported that clinically this treatment has proved successful in retaining teeth without pathosis in young mouths during the important process of secondary dentition.

Using the vital method of pulpotomy, Zander reported on the effect of calcium hydroxide and Caloxyl on the remaining live pulp. He observed the formation of an amorphous calcified layer on the cut pulp surface. This layer of amorphous calcium formed the matrix for the regular dentin formation resulting in a bridge covering the exposed pulp tissue. Zander stated all cases were not successful and suggested this technic as an emergency treatment in cases where other methods are quite likely to fail.

Easlick amputated anesthetized vital exposed pulp in primary and young permanent teeth and used calcium hydroxide as a pulp chamber paste. He observed rapid calcification over the cut pulpal surface and also completion of uncalcified root ends.

Vital Pulpotomy Technic

The use of the vital pulpotomy technic in preference to the devitalization method has several significant advantages. There is no chance of injurious effects to the periapical tissues or general body system from poisonous devitalizing drugs; there is the possibility that uncalcified root ends may become completed; and, provided local anesthesia is sufficiently deep, the entire operation may be finished at one sitting.

Case History. It is necessary to have a knowledge of the history, past and present, of the tooth in question in order to determine a course of treatment.

Roentgenograms. Intraoral x-rays of the tooth, viewing the apex from different angles, is a *sine qua non* for a proper diagnosis.

Anesthesia. Deeper anesthesia should be obtained for pulpotomy than for extraction of the same tooth, if management of the child patient is to be accomplished. Easlick uses an inferior dental block on lower molars, the injection being as near as possible to the mandibular foramen. This injection can be reinforced by paradontal infiltration into the socket of each root; and if a rubber dam clamp is to be placed, by a long buccinator nerve block. For the upper teeth, subperiosteal infiltration is used both buccally and lingually, with a nasopalatine block the anesthesia of choice for the four anterior teeth. Easlick has found anesthesia to be more profound after oil of cloves or chloretone-eugenol has been sealed in the cavity for at least twenty-four hours prior to pulp amputation.

Asepsis. Surgical cleanliness is imperative Sterilize all burs and instruments to be used. Isolate the tooth with a rubber dam and sterilize the field of operation with 3 per cent tincture of Iodine or 70 per cent alcohol.

Access. Good access to the pulp chamber is mandatory. All the caries should be removed and the external cavity preparation completed at this time in order to eliminate further irritation to the pulp after amputation.

Amputation. In molar teeth the pulp should be amputated at the level of the pulp chamber floor; and in anterior teeth, at the level of half the root length. Amputation may be accomplished either by a few revolutions of a large round bur, or by the cutting action of a large sharp spoon excavators, care being taken in either instance to remove only the desired amount of pulp tissue.

Hemorrhage. A certain amount of bleeding from the pulp stumps is to be expected, and may be controlled by a sterile cotton pellet soaked in a saturated solution of calcium hydroxide. A copious flow of blood, however, is a frequent complication and is often responsible for reducing the depth of anesthesia. Such hemorrhage is readily controlled by a topical application of adrenalin hydrochloride 1:1000 or 1 per cent neosynephrin hydrochloride.

Pulp Paste. Zander uses a pulp covering composed of 99 per cent calcium hydroxide and distilled water spatulated into a thick creamy paste, which is placed over the severed ends of the root pulp. In order to avoid pressure and deleterious effects from the cement on the pulp, a thin coat of paraffin is flowed over the calcium hydroxide.

Restoration. A layer of cement is flowed over the paraffin and a permanent metal filling for posterior teeth may be placed immediately.

Conclusions

Pulpotomy, or partial pulpectomy, is the amputation of the coronal portion of the pulp in an attempt to preserve exposed vital young permanent teeth in the dental arch. Vital pulpotomy in children's teeth is recommended in preference to devitalization pulpotomy in

that there is involved no risk to the patient from the drugs used for devitalization purposes; the completion of uncalcified root ends is anticipated; and if profound anesthesia is obtained, the dentist is enabled to finish the entire operation at one sitting.

Further research work on pulpotomy is necessary in order to properly evaluate its role in dentistry. However, in light of the great degree of success reported in the literature to date on partial pulpectomy, it would seem justified to encourage dentists to employ this technic wherever prognosis for conservative treatment is favorable. Pulpotomy appears to be especially indicated in badly decayed multi-rooted teeth, and may be used to advantage in the teeth of neurasthenics who are poor patients for root canal therapy.

Pulpotomy technic is simple, rational, and economical and can be performed with reasonable facility and safety by the average dental practitioner.

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Every now and then there are articles in our daily papers and popular magazines on fluorine in its relation to caries and frequently the manner in which the material is presented is such that it is misleading to lay readers. Such information of course, needs clarifying and our best means is personal explanation at every opportunity our patients give us.

Just what do we know about the caries fluorine picture? We know that there are approximately 300,000 people in Wisconsin and 15,000,000 in the United States that live in areas where there is fluorine in the water in amounts of one or more parts per million, and that anywhere in the world where fluorine is found in drinking water in amounts of one part per million or more, that the caries rate is lower even when it is in concentrations high enough to be toxic. We also know that in America even where the concentrations are at their highest that outside of mottling, no serious physical manifestations have been observed. We know further that the areas in the world where the toxic effect of fluorine is observed the people are living on starvation rations, particularly low in vitamins C and D.

Chemists everywhere agree that the form in which fluorine is used, is not important except for technical reasons because the activity is provoked by the fluorine ion and not a particular salt or acid. It has been demonstrated microscopically that topical application of fluorine results in the formation of calcium fluoride and by chemical analysis, that ingested fluorine combines with other minerals to form a fluorapatite in bone and enamel. In enamel of course, this can occur only during the formation of the teeth.

The current theories as to how it inhibits caries are that since the fluor-apatite and salts formed are less soluble in acids, they prevent in part or whole the demineralizing angle of the caries process, and that by occlusion of the organic invasion roads, the lysis of the organic parts of the tooth structure. This latter applies particularly to topical application.

Of course these remarks are very general and could and should be qualified and elaborated upon.

*From The Bulletin—Milwaukee County Dental Society.

AROUND THE COUNTRY

Your reporter promised it last issue. Here it is—Number 692290. Now wait a minute *Editor "Al"*, this is my private pilot's license! From the Hangar Tales reporter—date 5/29/47 we quote: *"Dr. Stanley C. (Ercoupe) Brown* flew his flight test last Saturday and passed the examination for his private license. *"Doc"*, as we all call him, worked hard to get that license, and his first passenger was his son, eleven year old *David*, who reported that his Dad did a good job and that he liked his ride very much. We will all be looking forward to taking a ride with *"Doc"*. Congratulations!"

So there you have it. At last your reporter is out of the rut and into the beautiful sky. I might report that our good friend *Ray Taylor* and family were here on Decoration Day and all *enjoyed* a ride with *"Doc"*. (Editor's note: That's not the word *Ray* used when he described that ride to me, Stan!)

A last minute press release from New York: "Creation of a Bureau of Dentistry within the Department of Health was announced yesterday (May 10) by Health Commissioner *Israel Weinstein*. *Dr. Harry Strusser*, who was dentist-in-charge of the Division of Dentistry, has been named Director of the new bureau. *Dr. Strusser* has been with the Department of Health since 1928 and has headed the Division since 1931. He was graduated from New York University Dental School in 1918, where he was elected to Omicron Kappa Upsilon. He won his degree in Public Health at Columbia. The new Bureau employs 160 dentists and 141 dental hygienists."

Your reporter first became acquainted with the new Director at a P.G. course in Public Health in Ann Arbor. For the first time in my life I was "out-talked" and to cap the climax, was literally swamped with reprints of articles by *Harry* on every subject imaginable. So—*"Reprint" Harry* has become a valued and lasting friend of your reporter. Congratulations *Harry*, on a well deserved honor!

From the College of Physicians and Surgeons of San Francisco we receive the announcement of a Refresher Course in Dentistry for Children under the direction of our own *Charlie Sweet*, with the assistance of *John Hughes* and *Charlie's brother Clifford Sweet, M.D.*

The course is designed to meet the needs of returning veterans and practicing dentists to better understand the child patient, refresh operative technics, review recent developments of caries control, anesthesia, pulp therapy, cavity preparations and restorations for primary and young permanent teeth.

The dates: September 15-24, 1947, October 13-22, 1947, November 3-12, 1947, January 5-14, 1948, March 22-31, 1948. May 10-19, 1948, and June 21-30, 1948. Pick your dates and avail yourself of a real educational treat. They even say that California has *some* nice weather (at times).

Our good friend *Dean Roberston*, Wichita Falls, Texas, spent two weeks in Ann Arbor absorbing the array of talent *Ken Easlick* provides in his refresher course in Dentistry for Children. *Robe* has promised to send me his reactions, but having taken the course myself, I realize that he will need some time to rest before making his report! How this chap *Easlick* pours it on—and makes you *like* it!

Joe Peabody, of Houston, Texas, reports that his pedodontic practice is really moving right along. Joe uses nitrous-oxide-oxygen analgesia for many of his operative services. He also uses the rubber dam upon occasion. *Joe* reports great success with the analgesia technic, and concedes that the use of the rubber dam under local anesthesia is successful too. Take your choice, fellows.

Bill Taub, N.Y. State Unit reports: *Dave Ast*, President of our Unit, is "abandoning" us —leaving early in April to spend a year in

Europe to study the matter of dental care for displaced persons.

The annual meeting and forum of the N.Y. Unit was held this year in conjunction with the annual meeting of the State Dental Society. The evening of May 14th was reserved exclusively for the Unit's forum and table clinics on dentistry for children.

The N.Y. Unit's slogan, "Adequate Dental Care for More Children" received a great impetus at this meeting. Proud and pleased are the N.Y. boys over their recognition by the State Society. None other than our Ambassador of Dentistry for Children — *Walter McFall* acted as guest speaker for the memorable occasion. Any wonder the evening was a success?

A nice report from the Pennsylvania Unit: "At the annual meeting of the Pennsylvania State Dental Society on May 6, 7, and 8, our Unit presented a session on Dentistry for Children which was well attended and lead to animated discussion. Clinicians and subjects presented were: "Proof Positive That Enamel Destruction Can Be Prevented," by *Walter S. Weisz,* of Pittsburgh; "Operative Procedures in Dentistry For Children," by *Raymond Werther,* of Philadelphia; "Simplified Roentgenographic Procedures For Children," by *William J. Updegrave,* of Philadelphia. *Frank Nash,* of Scranton, Pa., presented "Comments On Prevention of Malocclusion."

Following the presentation of these subjects *Dr. Ralph G. Orner* acted as moderator of a most enlightening general discussion by the large attendance. From reports a real "Town Meeting" developed and much progressive thinking was stimulated.

Another interesting session by the Penn. Unit is reported by *Gertrude Tank.* "Preventive Pedodontics" was presented as a "Town Hall" program, with *Ernest F. Ritsert* presenting the subject and *Drs. Raymond Werther* and *Clay Boland* as discussors. *Dr. Ralph G. Orner* acted as moderator.

The membership drive at the Pennsylvania State meeting resulted in the acquisition of six new members. One of them was *Dr. Lourdes Concepcion,* from the Philippines. *Lourdes* is interested in activating a Unit in the Philippines.

New officers of the Pennsylvania Unit are: President, *Dr. Ralph Orner*: Vice-President, and Program Chairman, *Dr. J. Horace Githens;* Sec.-Treas., *Dr. Gertrude Tank.* The first meeting of the Unit under this new leadership will come in October. An ambitious program is planned and the continued growth and influence of this Unit is assured.

From the A.D.A Convention City of Boston we also have good news. "At the annual meeting of the Massachusetts Dental Society, the M.S.D.C. Unit presented a most interesting program. The following subjects were presented: "Orthodontic Treatment of Cleft Palate Cases," *Dr. Edward Silver.* "The Normal Alignment of Impacted And Retained Teeth by Orthodontic Therapy," *Dr. Sidney Stone.* "Cavity Preparation and Matrices for Compound Amalgam Restorations," *Dr. Harold Berk.* "Operative Dentistry for Children," *Dr. R. Ronald Wyman.* "Treatment of Infected Primary and Permanent Teeth," *Dr. Laura B. Deans.* "Simplified Technic in Cavity Preparation for Silver Amalgam Fillings, Castings, and Functional Space Retainers for the Deciduous Dentition," *Dr. Anna Mintz.* "Dental Surgery Pertaining to Children," *Dr. Edward Soares.*

From our New York Unit we find that our beloved *Walter McFall* has not retired to private practice! Our Ambassador brought forth his dress suit from the moth balls and gave the boys "the works." The assistants were invited too, and turned out en masse to hear *Walter.* A packed house was reported, and justly so—if you have heard *Walter.*

To ASDC'er *Ruth Martin,* Professor of Dental Pediatrics in the Washington University School of Dentistry, we take a bow in recognition of her selection as a "Woman of Achievement" by the Group Action Council of St. Louis. To a gracious, charming lady of Dentistry—congratulations!!

From *Bill Taub* at Albany, comes word that *Thaddeus P. Hyatt,* the father of "Prophylactic Odontotomy," now 82, is still actively interested in dentistry for children. One of the founders of the A.S.D.C., *Dr. Hyatt* now is enjoying his retirement at Wee Haven, Dav-

enport Ridge Road, Stamford, Connecticut.

In true California style, there is local competition—or should we say "cooperation"? The U. of Southern California also announces a group of Refresher Courses. Our friends and A.S.D.C. members *Drs. F. E. Hogeboom* and *B. Z. Rabinowitch* will present the Pedodontic course. The fee is $80—Enrollment limited.

Working with *Larry Corbman,* Chairman, and *Michael Cohen,* co-Chairman, of the Annual meeting in Boston August 2-4, are the following: *Harold Berk, Walter E. Briggs, R. R. Davenport, H. M. Marjerison, Charles Pollina, M. Sherman, James Springer, J. F. Volker, H. A. Zander, Paul K. Losch.*

Kenneth Easlick was recently honored as a recipient of an Honorary Membership in the recently established Cuban Society of Dentistry for Children, and was featured with photograph and biography in their quarterly Journal.

Secretary Mott Erwin has also been the proud recipient of an Honorary Membership, together with the Certificate and lapel insignia of the Cuban Society of Dentistry for Children, and we expect soon to see *Mott's* biography in their Journal.

John Brauer is enjoying his new position at the University of Washington, Seattle. *John* says that *Mott* underestimated the beauty of the Pacific Northwest and invites all of us to visit this great section of the country.

Send in that coupon on page 13, for a ticket to the Twentieth Anniversary Luncheon, Monday, August 4, at 12:30 P.M.

Our "silver tongued orator" was out on the loose again! *Walter McBride* contributed much to the Texas State, Iowa State and Kansas State meetings. *Mac* says he flew—to save time, but your reporter will lay odds he kept wishing for one foot on the ground!

Joe Cabot, recently granted a specialist license in Pedodontics in the State of Michigan, will leave the C.S. Mott Foundation (Flint, Michigan) and enter private practice in Detroit, come June 15th.

E. Carl Miller, of Cleveland, will again act as program chairman for both the Cleveland Unit, A.S.D.C. and the Cleveland Dental Society. How this man *Carl* finds time to maintain his large practice, present his outstanding amalgam clinics throughout the country and act as program chairman for two large dental societies is beyond me! Please note—The Cleveland Unit reports forty-nine new members, with most credit due *Norman Denner* and his membership committee.

Have you seen the Transparent Man at the Cleveland Health Museum? Well sir, this treasured exhibit now has a transparent tooth, and eight foot exhibit brilliantly demonstrating the exterior and interior parts of the tooth by sectional illumination.

Our friend *George Teuscher,* and members of his Pedodontic Department at Northwestern, presented a Pedodontic Teaching Conference in conjunction with the School of Education of the University, June 26 to July 2. An excellent program was offered to an appreciative group of teachers from all over the country.

Attend the A.S.D.C. meetings in Boston in August, and send your check to *Larry Corbman, Jack Wisan* or *Al Seyler* for a ticket to the Twentieth Anniversary Luncheon on Monday, August 4th at the Somerset Hotel. $3.00 per plate.

We hear that corpulent *Herschel Reynolds* of our Michigan Unit has picked up the nickname *of "Bubbles"! Editor Al* says it has something to do with his ebullient personality, not his dancing or bathing habits!!

Mike Cohen of our Boston Unit drove to Ann Arbor recently to pursue a short intensive course in Orthodontics under *George Moore* at the University of Michigan. *Mike* and his charming wife have a very poor opinion of Michigan drivers, since one of our less capable specimens proceeded to nearly wreck their new car the very first day of their arrival! Never mind, *Mike,* we're planning on sending you a consolation gift of a book of road maps, come Christmas!

With all our Units—only a few reports for your column! Why not news from all Units?

Surely your Journal is an asset to the promotion of dentistry for children. But it can be greater if each Unit will send a report to the Column Editor. Let us inflate the old ego all along the line. Certainly there is a chal-

lenge when a unit does something—so let us hear from more of you.

Dr. I. Joel, of the Jewish National and University Library, P.O.B. 503, Jerusalem, would like copies of the 1st and 2nd Quarter, 1946, issues of our Journal. He would appreciate receiving them from a reader of this column.

Eddie Fisch, Wainwright Taylor and *Al Seyler* from the University of Detroit Pedodontic Department attended the Pedodontic Teaching Conference at Northwestern last month. *Wainwright* and *Eddie* particularly enjoyed the lectures in Child Psychology, in view of their recent family additions!

From *Paul Taylor* of Texas: *Dr. Mary Rosenstein,* President of the Texas Society of Dentistry for Children presided at a joint meeting with the Texas Society of Orthodontists April 28th at San Antonio. *Dr. Walter McBride* of Detroit addressed the combined meeting on "The Profitable Inclusion of Children in Your Practice" and *Dr. Dan C. Peavy* of San Antonio spoke on "Prevention of Malocclusion."

Election of officers resulted in the following official family for 1947-48:

President: *Dr. Paul Taylor,* Dallas.

Vice-President: *Dr. J. F. Prichard,* Fort Worth.

Secretary-Treasurer: *Dr. Ellen Wellensiek,* Houston.

Congratulations to this active Unit, the second largest in the Society, and now let's have a few more personal items from down thar, *Ellen!*

Raeburn Davenport of our Massachusetts Unit sends us the following interesting information:

The Eastern District Association of the American Association of Health, Education and Recreation recently passed these resolutions:

Resolution No. 1.

Whereas, the dental health is an important part of any program for the protection of the health of children, and

Whereas, more and more attention is being given to this phase of the school health program, and

Whereas, this program of dental care is being materially interfered with by rules and regulations which do not permit such remedial programs to be conducted without penalty during school time,

Therefore, be it Resolved, That the Eastern District Association, A.A.H.P.E.R., shall urge school authorities to recognize the dental experience not to be penalized by marking health remediation program as an educational students absent or tardy for keeping dental appointments.

Resolution No. 2.

Whereas, in many sports programs students with active oral infection are permitted to participate,

Therefore, be it Resolved. That the Eastern District Association, A.A.H.P.E.R. through its members urge the approval of the following regulation, "the school authority and/or health authority responsible for the school dental health program shall bar from sport participation any student with active oral infection until such infection is corrected."

See ya all at the Twentieth Anniversary Luncheon at Boston on Monday, August 4th, Somerset Hotel!!

This department is conducted by Stan Brown. Please direct items of interest to him at Ithaca, Michigan.

Silver Nitrate Precipitation by the Howe Technic

GEORGE C. CLEARY, D.M.D.

Editor's Note—

The accompanying article is being published posthumously at the request of a Boston subscriber. It presents an excellent resume of the Howe Technic and logical conclusions as to its value. Dr. Cleary was graduated cum laude from Tufts Dental College in 1922, thereafter pursued research work and gave lectures and demonstrations on the use of silver nitrate, on which subject he was considered an able authority. His untimely death, of coronal failure, cut short a career of service to his fellow men.

A.E.S.

In an early issue of The Journal of the A.D.A. there appeared an article by Doctors Klein and Knutson wherein is described a series of experiments to test the validity of the claim that Nitrate of Silver will, when applied to carious processes in tooth structure, render that area immune to further bacterial action.

Inasmuch as this article emanates from The National Health Institute, United States Public Health Service, it has no doubt raised the question as to the efficacy of Nitrate of Silver as a potent sterilizing and immunizing agent.

Careful study of the paper fails to disclose any single portion of the series of experiments wherein the now accepted Howe Technic was used on any one of the children under observation. Further, the bibliography of nine references omits any reference to the original work done by Dr. Howe or to any of the supporting articles which followed his original publication.

All dentists are aware, I hope, that every fissure in every tooth is a potential cavity which, if untreated, will at some future date unquestionably undergo digestive changes. These changes we recognize, in their later stages, as a carious process.

Time and time again the statement has been made, by men not fully cognizant of the Howe Technic, that the technic does not get desired, and claimed, results. As many times a few pointed questions as to technic bring forth one or more errors.

The Howe Technic is not hard to follow. It does demand an appreciation of the fact that you are handling a very sensitive chemical. Definite and fixed rules are laid down with respect to this chemistry. Follow those rules and results will be attained.

With the clinical facilities at their disposal, it would be interesting to have Doctors Klein and Knutson repeat the tests as enumerated in their paper, using three molars instead of two.

Molar Number One:

Use as a control. Careful bitewing films are to be secured every three months, using identical film, angulation, exposure and development. Nothing more.

Molar Number Two:

Identical technic, with no variation, as described in their article. This tooth to be checked every three months with identical bitewing films.

Molar Number Three: Use the Howe technic, as follows:

I. With the finest of explorers carefully remove as much debris as possible from all fissures.

II. With a bristle brush carrying a pumice mixture, clear away the mucin from all areas available to the action of the brush.

For the interproximal spaces, a flat ribbon floss will carry the pumice mixture through those areas clearing away mucin and debris.

III. Thoroughly flush the mouth with warm water under pressure.

Mouth washes containing chlorides or Formaldehyde must not be used.

IV. Isolate the tooth from any contact with saliva. Scrub the tooth for one full minute with a full strength solution of Hydrogen Peroxide.

V. Carefully dry the tooth with a blast of warm air.

VI. Flood the tooth with alcohol.

VII. Dry the tooth "bone dry."

From this point in the procedure it is imperative that no saliva come in contact with the tooth. If saliva does flood the tooth, start over and repeat the peroxide and alcohol bath. This is important because saliva contains dissolved sodium chloride, which will result in the formation of a Silver Chloride, which salt obviates the desired chemistry.

VIII. With the correct type of instrument, preferably the Forsyth Model Applicator, the Nitrate of Silver solution is applied to the area under treatment. The use of a correct instrument is stressed because the amount and placement of the fluid must be under the control of the operator.

To attempt to use a wad of cotton to place the solution means an absolute loss of control of the fluid and also a lack of knowledge as to the amount of fluid reaching the tested area.

Another word of warning. If one is to attempt a Nitrate of Silver technic, it is absolutely essential that a chemically balanced, fresh solution be used. The corner druggist does not possess the equipment, knowledge or skill necessary to make up an ammoniacal solution of Nitrate of Silver which will remain a balanced solution. The cost of the Howe solution prepared solely for dental use is negligible per unit of treatment.

IX. Allow at least two minutes for the chemical to penetrate into the depths of the fissures.

X. Take up any excess of solution.

XI. With *another* applicator apply Howe's Formalin.

Right here is the crux of the entire rationale of the Howe Technic. If definite results are to be attained, it is imperative that Formalin be used and *not* Eugenol.

From somewhere this Eugenol error has crept into the Silver Nitrate procedure and there exist some operators who hope, in vain, that Eugenol will do what Formalin does. This thought is erroneous.

A simple test will convince any operator that Eugenol reduction is merely a surface stain. Apply Nitrate of Silver to any carious area, reduce with Eugenol, extract the tooth and section it by grinding. Such a treated tooth is devoid of any visible penetration. Treat another tooth following the Howe technic and on section note the depth of penetration.

The resultant mass following the application of Nitrate of Silver (Howe) reduced by the application of Formalin (Howe) is a very complex albuminate of Silver which mass is not present when Eugenol is used as the reducing agent.

Eugenol is not recognized at a potent sterilizing agent.

Formalin *is* recognized as a potent sterilizing agent.

This technic carried to its correct and logical conclusion will result in a caries free, caries arrested area. Repeated applications will eventually present a surface so impregnated with metallic silver that burnishing is possible.

In the interproximal spaces a piece of cleaned, sand free, linen strip attached to the lugs of a rubber dam clamp will carry the Nitrate and Formalin occlusogingivally and bucco-lingually with identical results chemically.

I feel confident that if a procedure as above outlined us used, a future report will bear testimony to the usefulness of Howe's Nitrate of Silver and Formalin.

Don't Miss the Twentieth Anniversary Luncheon of the A. S. D. C.
Monday, August 4, Somerset Hotel, Boston, Mass.

Undergraduate Courses in Dentistry for Children*

RALPH L. IRELAND, D.D.S.
Lincoln, Nebraska

It is safe to conclude from the discussion this morning that dentists in the United States have too frequently given children the "brush off". They have, so to speak, "turned over and played dead" whenever a child came to their offices. I am sure that most of you who are attending this conference today and others who have thought about problems of dental care for children, have tried frequently to analyze why many dentists do not like to operate for children. The answers commonly given are: (1) the inability of the dentists to manage children; (2) the dentist's lack of knowledge of the operative procedures necessary for the care of the child's teeth, and (3) the inability of the dentists to receive adequate remuneration for their services. If we add to these reasons the parent's attitude and lack of knowledge concerning the dental care of children, we have most of the factors involved in the problem of providing dental care for children. I have been asked to discuss Undergraduate Courses in Dentistry for Children as One Means of Making More and Better Service Available to Children.

The American Society of Dentistry for Children has constantly endeavored to encourage dental schools to incorporate a course in dentistry for children in their curriculum. For our discussion a brief review of the history of Dentistry for Children in the Undergraduate Curriculum would be in order. According to a survey they made in 1928, seven schools were providing lectures in dentistry for children. In 1932, twenty-nine schools were including lectures on this subject. In 1935, thirty-eight schools out of forty-one who replied to a questionnaire indicated that instruction in dentistry for children was included in the curriculum. In 1936, forty-two schools were including lectures in various departments on dentistry for children. Since 1942, dentistry for children has been on the list of subjects which the Council Education says should be taught in every dental school in the United States.

If the individuals who filled out the above questionnaires were intellectually honest, it would seem that more and better dental service for children should by this time be available to children. Yet we are meeting today to develop recommendations for the adoption of practical and realistic methods designed to make more and better dental services available to children. Either undergraduate instruction in pedodontics is not as important a factor in the problem of providing dental care for children as some of us have believed or many dental schools are doing a very poor job of teaching this subject.

Most of you, I think, will agree with me when I say that undergraduate instruction in pedodontics should be a most valuable method of expanding dental care for children. If it is impossible to inculcate the desire to operate for children in the student during his most plastic years, it will be very difficult to convert him at a later period. We already have ample proof of this. However, there is no assurance that just because a dental student hears a series of eight, sixteen or thirty-two lectures on dentistry for children, places a few silver amalgam restorations and some silver nitrate in the primary teeth during his junior and senior years, that his attitude toward dental care for children will be different from many of the dentists who are now in practice. Undergraduate instructions in pedodontics will raise the quality and quantity of dental service for children in proportion to: (1) the quality and quantity of the instruction received in pedodontics, and (2) the attitude of the dean and faculty toward pedodontics and preventive dentistry.

The attitude of the dean toward dentistry

*Read before the Conference on Dental Services for Children, sponsored jointly by the American Society of Dentistry for Children and the Council on Dental Health of the A.D.A., February 9, 1947, Chicago, Ill.

for children and preventive dentistry may affect the instruction which the dental student receives in several ways. The clinical fees received from preventive and operative service for children is generally not sufficient to make a department of pedodontics self supporting. This factor could make it much easier for some deans to de-emphasize dentistry for children in the undergraduate curriculum. If the dean does not consider dentistry for children or preventive dentistry as important as oral surgery, prosthodontics or operative dentistry, pedodontics may be submerged in other courses. Likewise, in the absence of the proper appreciation of the value of instruction in pedodontics and preventive principles, the teachings of these subjects may be delegated to a member of the faculty whose main interest is operative dentistry, dental history or radiography. Perhaps a criticism of dental education as a whole is in order at this time, i.e., that too much time and attention have been given to "repair" in the undergraduate curriculum and not enough emphasis is placed on "prevention". This may explain why some deans have been slow in placing dentistry for children on the same level with other subjects taught in dental schools. However, it should be mentioned that there are deans who have provided a most adequate program of pedodontics and preventive dentistry.

During my tenure of office as president of the American Society of Dentistry for Children, I wrote to Dr. Harlan H. Horner, secretary of the Council on Dental Education of the American Dental Association and told him that I had heard there was still much criticism about the kind of job dental schools were doing in teaching dentistry for children. I asked him if, in view of the last survey of the dental schools made by the Council on Dental Education, this criticism was warranted. Dr. Horner replied in part "My observation—and this purely the view of one person and a layman at that—is that there is no field of teaching in which a livelier interest is being shown at this time. The present levels of accomplishments vary greatly and in some schools very little effective work has been done. I seem to see an upward trend, however, and a growing appreciation of the significance of this phase of dental teaching.

"The broad findings of the Council as revealed by the ratings assigned to the several clinical subjects in all the schools may be of interest but I should not want to attach too much importance to them. I give you below in percentages the ratings in dentistry for children as compared with all other subjects:"

Dentistry for children rated 67.7% in the combined C and D classifications against 37.7% for all other subjects. Dentistry for children rated 42.1% in the combined A and B classifications against 62.3% for all other subjects. According to this survey, dentistry for children does not compare favorably with other subjects which are taught in dental schools. Dr. Horner also pointed out that the survey showed that the average per cent of time given to dentistry for children in all schools was 2.33% of the total curriculum with a high of 12.00% and a low of .37%.

Even though some of the older practitioners of dentistry have done and will continue to do a creditable job of practicing dentistry for children; even though dentists may welcome more children into their practices when the next depression comes, it is my belief that the solution to the problem of providing more and better dental care for children depends, to a large degree, upon the quality and quantity of instruction which the dental student receives in pedodontics. Undergraduate courses of instruction in pedodontics should not only provide dental students with sufficient knowledge to enable them to operate for children, but they should also be presented to the students in such a way as to motivate them with an honest desire to accept and serve children in their private practice. It is interesting to note in the report of the 1938-39 College Committee of the American Society of Dentistry for Children on what was being taught by the various dental schools of the United States and Canada in the course on dentistry for children, that no school thought that motivating the student to accept children in their practices after graduation was of sufficient importance to list it as an objective of the course. Many teachers of pedodontics tell their students that the dentists "approach"

to the child patient is the most important factor in child management. Perhaps someone needs to remind the teachers of pedodontics that *their* "approach" to the *student* is also important. If students like pedodontics when they are in school they are more likely to practice it after they graduate.

Another activity of the American Society of Dentistry for Children which I believe affects our problems and should be of concern to us is the National and State Boards Examinations in Pedodontics. In 1937, the College Committee of the American Society of Dentistry for Children made a survey of State Boards of Dental Examiners to determine how many boards were examining their candidates in dentistry for children. The committee's report, published in the October 1937 issue of the Review of Dentistry for Children, showed that of the forty-four boards who answered the questionnaire, twenty-four were asking questions on dentistry for children. None of the boards examined in dentistry for children as a separate subject. They scattered the questions throughout the other subjects.

When the above survey was made the curriculum of all the dental colleges did not include a course in pedodontics. Now that the Council on Dental Education includes dentistry for children in the list of subjects which must be taught in all dental schools, it seems that the National and State Boards of Dental Examiners should keep pace with dental education and examine candidates in this subject. With the emphasis now being placed on dental health care for children, pedodontics merits a place on the examining boards "starting lineup" and it should no longer be a "fill in" for other subjects. If National and State Examining Boards would examine in pedodontics it would impress the candidate with the fact that the dental profession considers pedodontics just as important as oral surgery, orthodontics, prosthodontics or any of the other subjects in the dental curriculum. A state board examination in pedodontics would also stimulate the dental schools to do a better job of teaching.

In order that undergraduate instruction in pedodontics may fulfill its role in making more and better dental care available to children, I offer two recommendations for your consideration:

First, that a committee study and set up what constitutes the minimum essentials of undergraduate teachings in pedodontics; that the committee's conclusions be sent to the Council on Dental Education, and to the deans of all dental schools in the United States and that the analysis be published in the Journal of the American Dental Association and the Journal of Dentistry for Children.

Second, that the American Society of Dentistry for Children and the Council on Dental Health of the American Dental Association join forces in a campaign to encourage State and National Boards of Dental Examiners to examine their candidates in pedodontics as a separate subject.

Dental Hygienists and Assistants are also invited

to attend our Twentieth Anniversary Luncheon

Hotel Somerset, Boston, Monday, August 4

More and Better Dentistry for Children

Any dentist conducting a group examination of school children's teeth will discover that the average child is not receiving the benefits of competent dental care. If this be true generally, the dental profession is faced with a vexing problem.

It is commonly said in dental society meetings that clinics and plans for indigent dental care will eventually result in socialized dentistry. This is not entirely true. Clinics and low income plans will result in socialized programs *only if it is proved to the public that the dentistry provided by such programs is superior to the dentistry provided in private practice.* Thus the best means to prevent socialized dentistry is to organize private practice plans by which better dentistry can be provided for more children.

Recognized dental organizations have pronounced the principle that the treatment of children must be given precedence in the practice of dentistry. Such a principle translated into action will reflect credit and glory to the dental profession. This editorial is written in the hope that every component society of The American Society of Dentistry for Children will co-operate in an effort to further the interests of American children through treatment in the private office. How can this be done?

First, the membership and activity of the American Society of Dentistry for Children should be markedly increased.

Second, each component society should conduct programs stressing dentistry for children.

Third, dentists who have successfully treated children should present clinics and discussions on the subject before component and state societies.

Fourth, component society journals should stress the importance of dentistry for children.

Fifth, schools should permit children to visit the dentist during school hours.

Sixth, every dentist in America should immediately improve technique in the treatment of deciduous and permanent teeth of children.

Seventh, every private practitioner should utilize the principles of child psychology when treating children.

Let's not excuse ourselves or rationalize away this problem. Remember it is the responsibility of organized dentistry to provide more and better dentistry for children.

J. M. Wisan, President, A.S.D.C.